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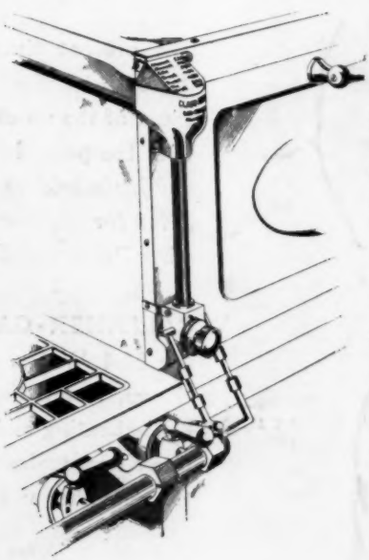

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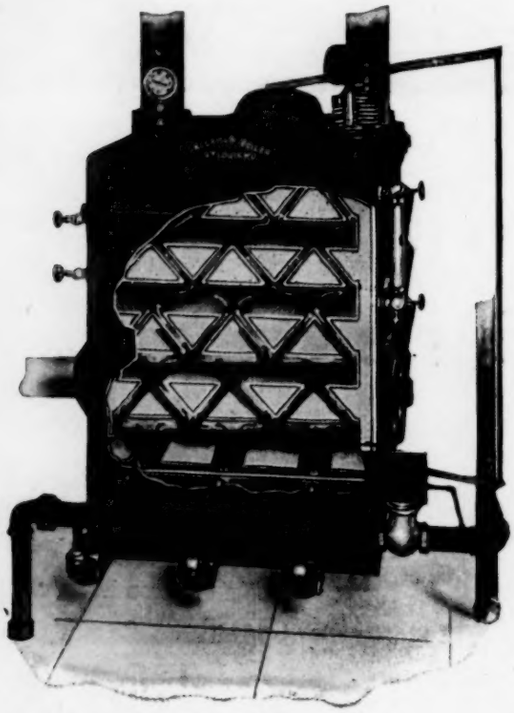

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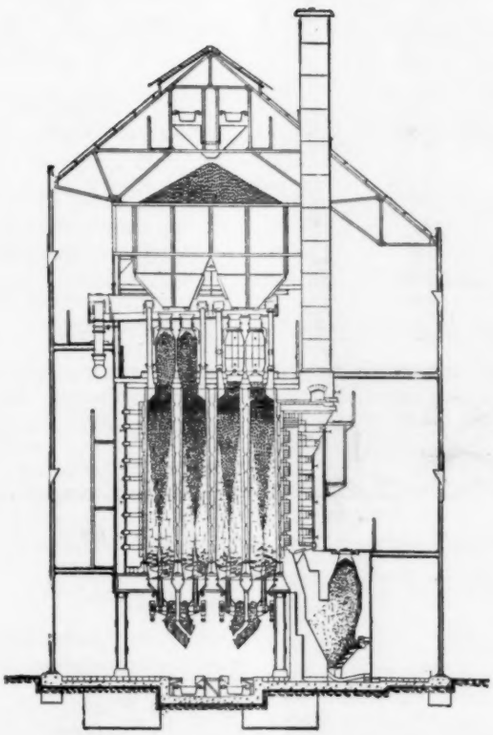

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American Gas Journal

SIXTY FIFTH YEAR

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Registering Carbon Dioxide Meters

The principle on which they operate—Necessity of their use

K. Muenzer

As fuel becomes more expensive, more attention will be paid to the burning of the same on the grate so as to produce the best results with the consumption of the least amount of combustible. The first essential condition of high efficiency in boiler plant operation is the attainment of efficient combustion of the fuel. The carbon dioxide content and the temperature of the flue gases are the two primary factors which determine the efficient consumption of fuel in the furnace. It is evident that the more complete the combustion of the fuel, and hence the less the quantity of it required to produce a certain effect, the greater the proportion of carbon dioxide in the flue gas and likewise the lower the temperature of the same, provided other conditions remain constant.

There are quite a few different types of apparatus, which automatically analyze flue gases, but these devices mostly record the percentage of carbon dioxide in the flue gas. However, even the mere watching of the carbon dioxide content of the flue gases will serve to indicate certain remediable deficiencies in the combustion process.

When there is a sufficient excess of air in the fire box and through the grate, the carbon will burn to carbon dioxide and will yield 8100 calories per kilogram. If, however, there is a deficiency of air, then the product of combustion is carbon monoxide, and the heat obtained is only 2400 calories. The rest of the heat, or 5700 calories, is contained in the carbon monoxide, which escapes into the atmosphere as unburnt gas.

Loss of Heat and Excess of Air

Figure 1 shows what happens when an average grade of coal is burnt under different conditions and demonstrates the relation between the excess of air in the combustion zone and the proportion of heat that is lost in the flue gases. This figure indicates, for example, that one kilogram of the average grade of coal, when burnt completely with a 50 per cent excess of air, will produce approximately 12 cubic meters of combustion gases. Under this condition a sensible quantity of heat goes to waste, which is generally designated as the flue loss. The magnitude of this loss is, moreover, dependent on the quantity of the flue gas as well as on the temperature of the same. When the excess of air amounts to 50 per cent, this loss is 1261 heat units. When working with a 200 per cent excess of air, there are obtained from each kilogram of coal 24 cubic meters of flue gas, and the flue loss will therefore amount to 2417 heat units. This then means that the heat loss up the chimney has been almost doubled, compared with the operation with 50 per cent air excess.

Maximum Heat Developed by Complete Combustion

As is deducted from what has been said above, complete combustion of a combustible leads to the development of the greatest amount of heat, hence to the maximum possible utilization of the potential heat value in the fuel. To attain this goal, it is first necessary that the fire gases be mixed very intimately with the oxygen of the air during the combustion process, a condition which is very difficult to obtain in practice. The nature of the combustible, the size of the pieces of fuel, as well as the opening and shutting of the fire doors by the fireman, all serve to allow a certain amount of air to infiltrate through the grate and furnace and come in contact with the burning gases. In this way a definite volume of air streams through the fire without taking part in the combustion.

If the quantity of air, that is fed to the fire, is just sufficient to secure theoretical complete combustion of the fuel, then the actual combustion process takes place in a deficiency of air and the result is a considerable loss of heat due to the incompleteness of the burning.

Heat Loss and Incomplete Combustion

Figure 2 shows the heat loss curve for the condition of incomplete combustion with a certain definite excess of air. The carbon dioxide curve rises from zero as the excess air is increased and reaches a maximum, which is attained in the given case when

*Translated and adapted from "Das Gas and Wasserfach," 1923, 284-87.

the excess of air is 45 per cent. During this time the carbon monoxide line falls from its maximum value to zero. In this case the most favorable combustion conditions are obtained when the excess of air is 45 per cent. As the excess air increases, the carbon dioxide curve sinks again. For example, if an ordinary carbon dioxide recorder indicates 10 per cent CO_2, then this condition of combustion may be designated as the point d in the figure, or by the point e when the excess of air is greater. In the first case, in addition to the 10 per cent of carbon dioxide, about 5 per cent carbon monoxide is also present in the gases of combustion. In these gases 37 per cent of the heat originally in the fuel is drawn off unused through the chimney (see point f in the figure). Hence with one and the same carbon dioxide content of 10 per cent, the loss in fuel value under the condition of too small an excess of air is approximately 17 per cent greater than under the condition of too large an excess of air.

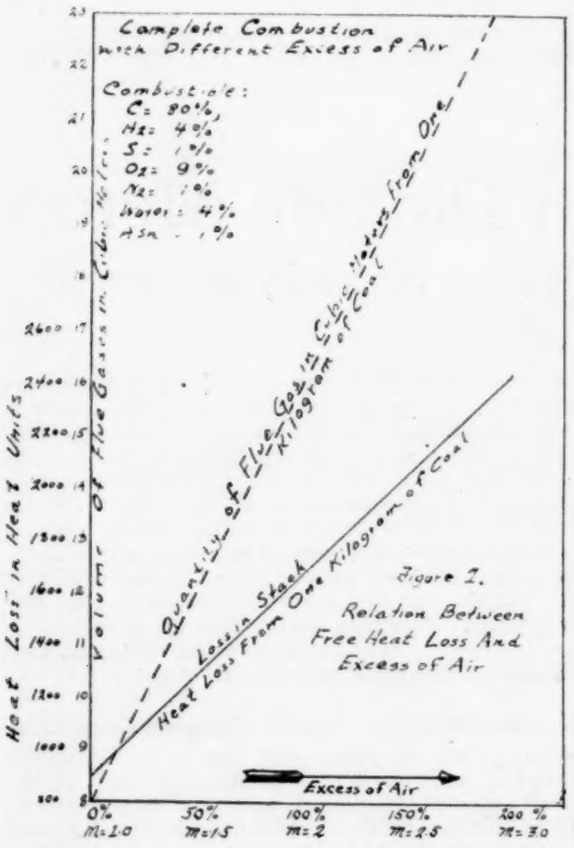

Figure 1. Relation Between Free Heat Loss And Excess of Air

In the first case the fireman must take measures to increase the amount of air entering the furnace, and vice versa in the second case. Just what measures he should take, he cannot determine from the carbon dioxide content of the flue gas alone, for, as may be seen from the carbon dioxide curve, there is always a certain amount of carbon monoxide mixed with the carbon dioxide. In a similar manner, just as incomplete burning takes place through the lack of sufficient air, too low a temperature (caused by too rapid cooling of the gases) can also be the cause of incomplete combustion. In such cases large excess of air does not prevent the loss of heat in the form of combustible gases. Hence in order to burn fuel efficiently it is necessary that the fire be constantly watched and that the proper excess of air be admitted to the combustion chamber.

The Duplex Mono Machine

The Duplex Mono machine is particularly well adapted for determining the most efficient combustion conditions. In using the instrument it is not necessary to know either the carbon dioxide maximum or the composition of the fuel, in order to obtain correct results. The Duplex Mono machine keeps a running record of the amount of carbon dioxide and of the total quantity of carbon monoxide, methane and hydrogen in the gas.

Figure 3 is a diagrammatic representation of the manner in which the apparatus operates. A quantity of gas A is measured off periodically and is introduced into an absorption vessel D; the residue is measured in a measuring vessel E. The difference between the original quantity A and the residual gas is plotted on the curve sheet as the carbon dioxide content of the flue gas. The unshaded part of the curve sheet corresponds to the quantity of carbon dioxide in the flue gas.

The gas, which is sucked in for the next determination, the quantity of gas A, as shown in figure 4—is led through the automatic valve B into an electrically heated device C for ascertaining its content of combustible matter. The residual combustible gas in the test sample is burnt to carbon dioxide and water vapor. The carbon dioxide, which is formed in this combustion and that originally present in the gas sample, are absorbed in the caustic soda bulb D, in which the condensed water also collects. The residual gas is measured in the measuring

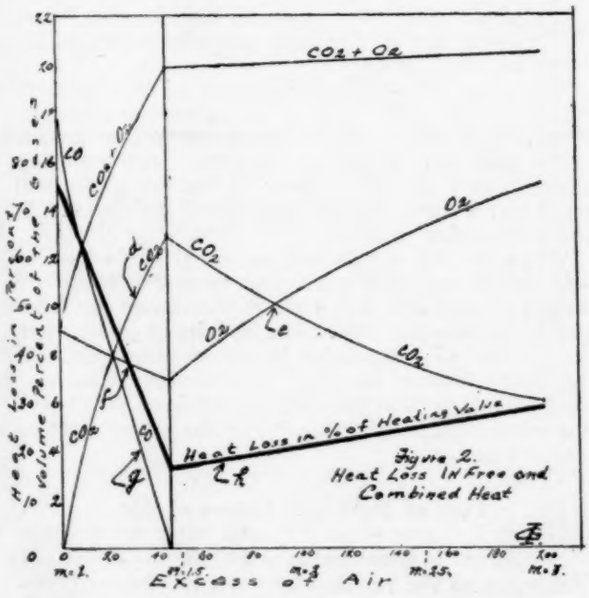

Figure 2. Heat Loss In Free and Combined Heat

bulb E. The difference between the original gas volume and the residual gas volume indicates the total amount of carbon dioxide and combustible gas in the flue gas. The difference between the two analyses, one following right after the other, tells accordingly how much carbon dioxide is formed from the gas which is burnt in the apparatus, which is assumed to be carbon monoxide. When this difference is multiplied by two-thirds, the carbon monoxide content is obtained directly.

Essential Features of the Apparatus

The Duplex Mono apparatus differs essentially from ordinary carbon dioxide recorders in two respects, the valve B and the electrical combustion oven C. The reversible valve does not require any special attention; and the same is true of the combustion furnace as long as the apparatus is used to analyze flue gases from boilers. The only attention given to the apparatus is that usually required in the operation of regular types of carbon dioxide meters.

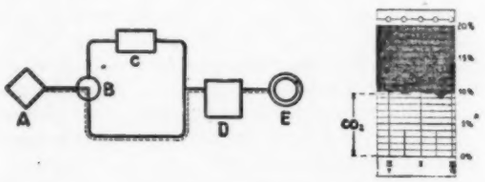

Figure 3

The arrangement of the different parts of the apparatus as well as the manner in which the device works may be seen from figure 5. The apparatus is operated with pure water, which is under at least half an atmosphere pressure. The water enters through the regulating valve 16, as well as through the perforations in the container 47, and penetrates into the flask 13, which is filled with mercury. The pressure of the water on the surface of the mercury forces the latter into the tubes 24, 25, 44 and 43. Tube 24 widens out in its upper part into the volume measuring device 11. Tube 44 is open to the air, while tube 43 opens out in the pear-shaped enlargement of the tube 25.

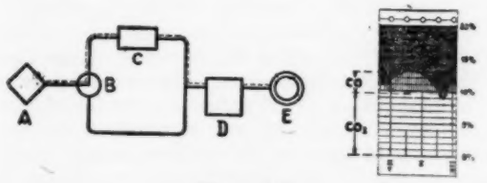

Figure 4

The lower part of tube 43 is not directly connected with the mercury in the flask 13, but ends somewhat above the bottom of the inserted container 47, which also contains mercury. Due to this arrangement the mercury rises to a higher point in the tube 43 than in the tubes 24, 25 and 44. As soon as the water, which is under pressure, enters the flask 13, the mercury begins to rise in the tubes, and continues to rise, until the mercury, which is in the container 47, has been completely forced over into the pear-shaped part of the tube 25 through the tube 43. At that moment the water is in direct connection with the outside air through the run-off tube 46, and the excess pressure in the mercury flask 13 is released. The result is that the mercury in the tubes 24, 25 and 44 returns to the flask 13 and fills this up. A part of the mercury flows through the openings into the container 47. This results in closing the tube 43 and the connection between the water and the outside air is cut off again. The pressure in the mercury flask 13 rises again and the phenomena are repeated in the same order as described above.

The purpose of this process is to suck a definite quantity of gas into the apparatus for testing purposes and push the gas sample along through the same.

Working the Apparatus

The water under pressure is compressed further and forced through the pipe 14, the coil 57 and the connection 42 to the reversing device 3-9. The cylindrical bulb of that arrangement is lifted and remains in this position as long as the pressure water is cut off from the outside air through the mercury in the container 47. At the moment when this takes place and the water flows directly into the flow-off pipe 46, the excess pressure in the bulb is destroyed and the reversing device is brought back again into position through the action of a spring. Its motion

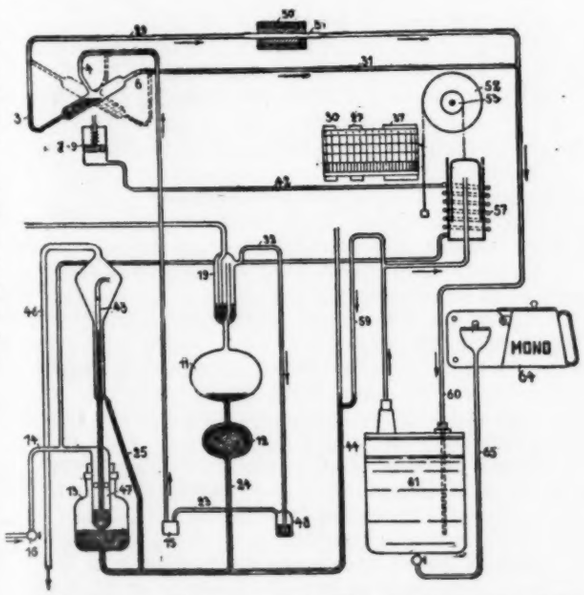

Figure 5. Diagrammatic Sketch of the Duplex Apparatus

(Continued on Page 492)

*Sub-Committee Report on Development and Education of Personnel

Collective effort of employees called for— Familiarity with every branch of work essential

A. F. Short, Chairman
Providence Gas Company, Providence, R. I.

REALIZING the scope of the subject which your sub-committee on Development and Education of Personnel had to cover, we have in this paper simply hit the high spots, hoping that we may sow some seeds that will eventually bear fruit.

We first prepared the following outline of what we proposed to cover and have followed the same throughout:

1. Selection of personnel adapted to carry out company's policies in contact with the public.
2. Development of such personnel through other departments.
3. Education of employees.

1. Selection of personnel divided:
   (a) Male or female clerks in various positions;
   (b) Source from which clerical help is obtained;
   (c) Requirements necessary.
2. Development of personnel divided:
   (a) In Distribution Department, for complaint and order clerks in main offices;
   (b) In Meter Readers' Department, for collectors and general clerks in main offices.
3. Education of employees divided into two groups:
   (a) Education within the company;
   (b) Education without the company.

Under (a) we will consider—

1. Education by talks and lectures on different branches of our industry;
2. Education by classes at works followed by demonstrated work;
3. Education by classes at distribution department followed by actual field work;
4. Education at meter repair shop;
5. Value of house organ;
6. Value of books and pamphlets—also posters;
7. Value of literature in pay envelopes;
8. Value of suggestion box.

Under (b) we will consider—

1. Courses taken at schools and colleges;
2. Special courses for certain classes of employees.

Under 1 (a) Male or Female Clerks in Various Positions

This is a very interesting and important subject as it is directly related to our relations with our customers. Local conditions and the company policy play an important part in deciding whether male or female clerks shall be employed in our offices.

In selecting clerks for our application and complaint departments and our tellers, or in fact, any of those who come in direct contact with our customers, it is very necessary to select those in whom our customers will have the utmost confidence. We are of the opinion that in the majority of our cities our customers prefer to do business with male clerks, especially if they have a complaint to make. It is held that the average customer is less liable to become abusive to a female clerk and that female clerks are inclined to be more sympathetic than male clerks. This is probably true in many cases, but does not the average customer really prefer to talk to the male clerk? Are they not better satisfied in the end even if the argument may have waxed warm at times? Somehow the public feels that the men in our offices rank a little higher, are a little nearer the big boss, than the women.

It is also very necessary that the clerks referred to have a complete knowledge of the work performed by the distribution department. This can best be accomplished by having the clerks accompany our fitters and complaint men in the field; not only to see how the work is done, but to actually do it themselves. It is hardly reasonable to expect women to train themselves in this way, consequently, they are handicapped in the work they are called upon to perform.

Under 1 (b) Source from Which Clerical Help Is Obtained

In large companies a competent employment manager is the one who carries the burden of securing new employees. Having made a study of this subject and being familiar with all sources from which employees can be secured and having a perfected system, the class of employees secured in the larger companies by the employment manager should be of high calibre.

The majority of the companies are not, however, large enough to warrant the expense of maintaining such a separate department, and the securing of new employees is usually left to the heads of the various departments. High schools, business colleges and trade schools are sources which are drawn on to a large extent. If employees are to be drawn from such sources, the idea of, in some way, presenting to the students of these schools, the opportunities offered by our industry is well worth our serious consideration. There are at least three ways to accomplish this.

First: By addresses before the students by a capable official of the company.

Second: By having classes visit our plants and show them just what a gas plant is and how it functions.

Third: By using every means possible to have courses relating to the manufacture and distribution of gas, established in our schools and colleges.

Under 1 (c) Requirements Necessary

First of all we should select employees who can

*Presented at the American Gas Association Convention, Atlantic City, N. J.

control their tempers, no matter what provocation may arise. No matter what their other qualifications might be, they will get us into trouble sooner or later if this one qualification is lacking. Courtesy, diplomacy and the art of knowing what and what not to talk about are valuable requisites.

It is preferable to secure employees who have had a fair amount of schooling and have acquired the fundamentals upon which to build. This will be reflected later in any educational work we may undertake. Too often we pick employees with only one thought in mind, and that is, can they fill this or that position. Too late we find when a chance for promotion comes that they have one-track minds and that all-around ability is lacking. Many times we find clerks doing unsatisfactory work in one department and by ascertaining, through direct questioning or through the department heads, what branch of the work most interests such employees, we are able to place them in positions for which they are best fitted. Employees who come in contact with the public must be of pleasing personality. A harsh voice or an abrupt manner is fatal to the success of any clerk. We must remember that the great majority of our customers come to our office to register a complaint, perhaps only once, and their opinions of our entire organization are formed by the treatment accorded them and the amount of individuality our representative injects into the case.

Under 2 (a and b) Development of Personnel

In selecting employees in our distribution office thought should be given to the fact that these employees should be of such calibre that they may be drawn upon to fill vacancies in our accounting and commercial offices. Their experience in the distribution work will be of great value in their contact with the public. An exchange of clerks between these departments for a period of sufficient length to enable them to become thoroughly familiar with the workings of each department is advised. Likewise, meter readers, if properly selected, can be promoted to the collection and bookkeeping departments.

Under 3 (a) Education of Employees Within Company

The education of our employees is a big task and should receive much more attention by us than is now the case. Education of employees will cost us real money and at times will be a discouraging proposition. If one means of education does not avail, then we must try some other means. Education of employees is constant and is never finished.

Your Committee considered that education within the company was of sufficient magnitude; therefore, we concentrated more particularly upon this phase of educational work.

Under 3 (a-1) Education by Talks and Lectures

The following are suggested as being subjects which would be of benefit to employees provided they can be made interesting:

1. History of Company

In the older companies probably few of our employees know anything of the past history of the company. A very interesting talk could be given, tracing the growth of the company from the beginning, showing progress made. In a talk of this kind, statistics should be avoided as much as possible.

2. How Company Is Financed

This is another subject of which most of our employees have but a faint conception and upon which they should receive enlightenment.

3. The Manufacture of Gas

More of a general talk than any which might be given in connection with class work of any kind.

4. Interesting and Novel Industrial Installations

All of us have many such installations that would be a revelation to our employees. To a large degree they have no conception of the many ways gas is used for industrial purposes.

5. The Distribution System

Explain the general layout of mains, services; how pressures are carried and maintained; the difference between high and low pressure systems and the many problems constantly being solved.

6. Complaints

How complaints of all kinds are handled and what it means to satisfy customers.

7. How Gas Accounts Are Kept

Complete outline of work done in the accounting office, from reading of meter to payment of bill.

8. Future of Gas Industry

The idea being to dispel any thought that might be lurking in our employees' minds that the gas industry is on its last legs.

Under 3

(a-2) Classes at works followed by demonstration work;

(a-3) Classes at Distribution Department;

(a-4) Classes at Meter Repair Shop.

Courses as outlined above will depend upon the facilities available in the different companies. The course at the plant will necessarily be more elaborate than the other two.

(A suggestion for a course at the plant is given in the original report.)

All clerks who come in contact with the public should know the fundamental principles of gas manufacture; how complaints are handled by the shop; how meters are set; how appliances are connected; how house-piping is cleaned and how meters are tested. They should be able to answer intelligently questions asked by customers. "I don't know" is a poor answer for any employee of a public utility to make to a customer. The switchboard operators should be familiar with the workings of each department so that connections may be speedily and properly made. They should be taken to each department and introduced to those with whom they will come in contact most. They will thus be able to visualize each call and thereby become far more efficient operators.

Distribution employees should know the manufacturing end, and the plant men the distribution end of our business. Appliance salesmen should be especially trained in every branch of the industry.

Care should be taken to simplify the class work and keep away from technicalities as much as pos-

(Continued on Page 493)

*A Study of Some Physical Laws Governing the Carbonization of Coal

Five laws of carbonization

A. W. Warner

Philadelphia Suburban Co., Chester, Pa.

THE YEARS of experience in the carbonization and gasification of coking coal have brought forth three fundamental processes, typified by coke ovens, low temperature carbonization and complete gasification—prime quality coke, prime quality oils and maximum gaseous B.t.u. Between these conceptions are a multitude of variations. From a ton of coal the coke oven produces some 10,000 cu. ft. of 550 B.t.u. gas, 12 gal. of degraded tar and the best grade of low volatile coke; the low temperature process produces some 4000 cu. ft. of 1000 B.t.u. gas, 23 gal. of oils, and a high volatile coke or coalite residue; while complete gasification produces gas of varying volume and composition, 23 gal. of oil and no coke. The gas from this last process is necessarily of too low a B.t.u. quality to distribute economically in our present distribution systems.

In studying the basic physical and chemical laws governing the phenomena of carbonization, it would appear that a fourth distinct and fundamental process is possible whereby the low volatile close-grained coke of the coke oven may be retained, the 23 gal. of low temperature and complete gasification oil, and also a yield of 8000 cu. ft. of 700 B.t.u. gas. This gas yield, it would appear, can be obtained by adding to 4000 cu. ft. of low temperature gas, the gas from the high volatile coke of the low temperature residue.

We have devised two pieces of crude apparatus to show how a fourth fundamental process can be applied to the carbonization of coking coal. From the experiments with this apparatus we have deduced the following five basic laws governing carbonization:

Five Laws Derived

I. If removal of volatile matter from coking coal were the only consideration, the high heats commonly used in carbonization are unnecessary.

II. The condensible hydrocarbons of coal are more valuable as raw products the near to their primary state they exist because no way has been found to convert any but a meagre portion of them into permanent gas.

III. The less the cracking, and the more the distillation of condensible hydrocarbons occurs, the less will be the intensity of heat required to drive off the volatile matter of coal.

IV. The less the heat through which the gases from the noncondensible hydrocarbons must pass in leaving the retort, the richer will be the gases and the greater the B.t.u. feet from this source per unit of coal.

V. The closer the ideals of IV. are met, the greater will be the possible cubic feet of mixed gas of a determined B.t.u. per unit of coal.

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*Presented at the American Gas Association Convention, Atlantic City, N. J.

First Law

I. If the removal of volatile matter from coking coal were the only consideration, the high heats commonly used in carbonization are necessary.

To bring this fact clearly before the eye, low temperature oils from a given coal were collected having a boiling point range from 660° to 750°.

With these 660°-750° oils at hand, some interesting physical experiments suggest themselves to the curious-minded. These oils were placed in a glass distilling flask in the neck of which was suspended a fly screen wire basket containing some twelve grams of coal. As these oils were made to slowly distill over, the coal was naturally caused to slowly rise through a pre-determined temperature range (660°-750°) and further to do so in an intensified atmosphere of the same liquid and vapor hydrocarbons as were present when these oils were driven from the retort. Thus it was possible to study under glass this critical decomposition point (660°) where all the physical characteristics could be observed by the eye.

Gas coal treated in this way suddenly commences at 660° to come out through the wire meshes and to slowly drop off in bubbling mats into the boiling oil. At the same time, the condensing oils themselves assume a dirty brown color. This phenomena continues with rising temperatures until the oils are distilled over. The gas evolution becomes more and more pronounced. Some vapors evolved at this time settle toward the oil surface, which is not surprising when you consider that ethane has a specific gravity of 1.038. The residue in the basket was found to be a dryish, greasy graphite-like substance possessing no coking characteristics but rich in gas-making constituents. The oils, containing the wash from the coal, when carried to oil coke left a residue rich in gas and possessing considerable coke-forming constituents. A tremendous amount of lamp black was formed in burning any of these gas-making constituents.

Before leaving these tests, it might not be amiss to describe another phase of carbonization studied with this type of apparatus. Certain low temperature oils below the 660° boiling point contain upwards of 30% tar acids. These acids (boiling point up to 450°) were separated from the oil in the usual way and placed in a glass distilling flask provided with a wire basket as in the previous test.

Second Law

II. The condensible hyrdocarbons of coal are more valuable as raw products the nearer to their primary state they exist because no way has been found of converting any but a meager portion of them into gas.

The primary tars from coal are largely high boiling point oils. The lighter constituents we usually associate with coal tar products are products of later decomposition which have left behind free carbon as well as

still higher vaporization point residues. Once these primary oils are separated from the coal in the primary stage, they can be more accurately controlled for further splitting up into products that may be desired in special apparatus designed for this purpose than in any high temperature carbonizing process known. In low temperature coal distillation or its equivalent, there is obtained at least twice the tar yield that high temperature gives. The nearer the primary stage the oils are obtained, the higher the proportion and content of tar acids, creosoting oils, anthracene, etc., will be before pitch of a desired quality is obtained. In our experiments, we have produced from the same coal by varying the temperatures of carbonization and the retort atmosphere, tars distilling 97% oil and 3% oil coke, down to tars distilling 30% oil and 70% coke.

Third Law

III. The less the cracking and the more the distillation of condensible hydrocarbons occurs, the less will be the intensity of the heat required to drive off the volatile matter from the coal.

In the carbonization of coal in an oven, there is formed a plastic film between the coke already formed and the uncarbonized coal. Its temperature must be between 660° and 750°—say 750°. As heat is applied through the inside wall of the retort, this film progresses inwardly toward the center of the charge. This film may at times interpose a resistance of as high as 30″ to 40″ (water) to the flow of gas and vapors.

Fourth Law

IV. The less the heat through which the gases from the non-condensible hydrocarbons must pass in leaving the retort, the richer will be the gases and the greater will be the B.t.u. feet per unit of coal.

So much has been written on the subject of the influence of heat on hydrocarbons and so conflicting have been some of the deductions that it is not necessary, at this time, to review this subject. However, it is essential to bear in mind that in ordinary methods of high temperature carbonization there seems to be a critical temperature between 1300° and 1500° where the rate of gas evolution and the quantity per pound is nearly double at 1500° what they were at 1300°. Above this critical range of temperature the evolution of hydrogen rapidly increases. The evolution of hydrocarbons of the paraffin series practically has ceased at 1300°. Methane is very stable up to 1500°. The carbonization problem, therefore, has been one of keeping the hydrogen content of the gas as low as possible consistent with driving off the volatile matter, because it has been felt that high hydrogen indicated uneconomic cracking of high B.t.u. gas constituents.

Our experiments have shown us that it is economical to drive off the volatile from coal at a temperature of 1470° and even lower and that the condensible tars (oils) can, at the same time, be driven off away from the heat at 750° F. and lower. Therefore, referring to the above example, it must be possible to obtain the full gas yield from the non-condensible hydrocarbons with far less degradation of the primary gas. There should be no gasified tar but in its place oil removed at low temperature for more suitable economic uses. An ethane content of 8% is not unusual for gases evolved in these tests with a retort wall temperature of as high as 1470°. Such gas contains absolutely no trace of naphthalene. As the complete range of carbonization from rich low temperature gas to lean gas from the residual volatile is continuously taking place within the narrow range of the plastic film, there is practically no change in the B.t.u. content of the gas from start to finish of the charge. Once these heat reactions (1020°-1470°) on low temperature tars are obviated and degradation of the primary gases is brought to a minimum, the study of gas from the coke residue becomes simplified. The presence of high vaporization point relics of the condensible hydrocarbons in the coking residue from high temperature carbonization so changes the retort atmosphere in the mass as to require high temperature to drive off the remaining volatile. So far as driving off the non-condensible hydrocarbons goes, no such temperature as 1300°-1500° is necessary. The ultimate products of the multitude of constituents in coal are materially influenced by factors other than the distillation temperature. We must know the atmosphere, pressure, and temperature at the moment of formation. As cracking invariably means a loss in gaseous B.t.u., it becomes evident that this process must give the maximum B.t.u. feet of gas from the non-condensible hydrocarbons.

Fifth Law

V. The less the heat through which the gases from the non-condensible hydrocarbons must pass in leaving the retort, the greater will be the possible cu.ft. of mixed gas of a determined B. t. u. unit of coal.

The last proposition is largely a problem in arithmetic. Owing to the removal in gaseous form of practically all of the volatile residual in the coke, the gas in our tests averages some 700 B.t.u., whereas low temperature gas should average 1000 B.t.u. In the one case we have 4000 cu. ft. @ 1000 B.t.u. plus 4000 cu. ft. of 400 B. t. u. In the other case we have 4000 cu. feet of 1000 B.t.u. gas and the remainder in the coke residue. Inasmuch as 300 B.t.u. blue gas represents the richest gas that can be made as a dilutant from coke, this 4000 cu. ft. of 400 B.t.u. gas must represent a distinct gain. It can be shown this way:

4000 cu. ft. @ 1000+10,000 cu. ft. @ 300=14,000 @ 500 B.t.u.

8000 cu. ft. @ 700+8,000 cu. ft. @ 300=16,000 @ 500 B.t.u.

Every time a high B.t.u. gas is broken down into two volumes of low B.t.u. gas and free carbon, the less of 300 B.t.u. blue gas can be used to obtain a determined B.t.u. This same reasoning applies to producer gas or any other substitute or combination.

Conclusion

A tremendous amount of work has been expended in the past by our fraternity, we feel, in trying to get rid of the labor connected with the products of degradation of hydrocarbons. Its work has been too largely with secondary problems, and the fact that degradation and its cost in raw materials have taken place, have not caused enough concern. Had the presence of these

(Continued on Page 492)

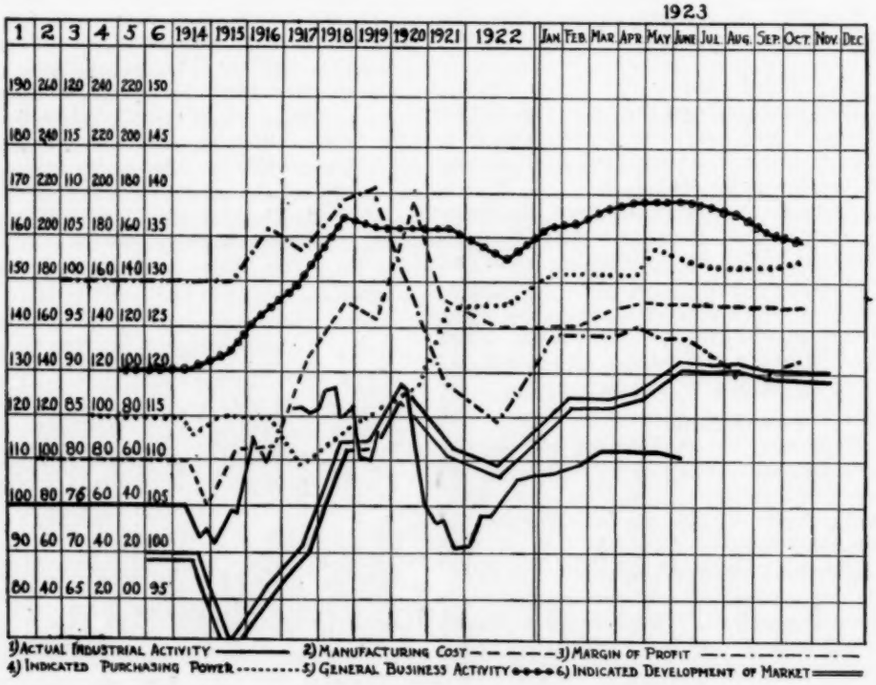
General Industrial Outlook Brighter

Finding of right goods for market leading problem

L. W. Alwyn-Schmidt

BUSINESS is getting better. There is no doubt about this fact, although there is little yet in the situation itself to indicate a decided improvement. On the contrary, all the usual indicators are still at comparatively low levels. Some have even shown a further but very narrow decline.

But manufacturers and retailers will have to realize that purchasing power can only be comparative. It can mean only the ability of the nation to spend money for purchases. To make for good business there must be also the will to spend. And it is this only that provides the motive power for a regular flow of merchandise from producer to consumer.



Nevertheless, there is plenty of reason to expect an early renewal of all commercial activity. This will bring the market back to the level of the early part of the present year.

Normally nobody would have worried about the present decline, but business men have become nervous during the last year. They do not trust the strength of the market. Furthermore, weak points are to be found in the structure, and these will have to be eliminated as we go along. This has been accomplished most successfully in the building and coal mining industries.

Present Narrow Declines Need Occasion No Worry

But the depressing influences of such declines can be of temporary character only and should not give any special concern. There is nothing to fear as long as the purchasing power of the nation remains where it is and as long as manufacturers are able to keep factories going at a profit not much below the present.

Present Problem—Finding Right Goods

The present problem, therefore, is not one of finding the buyer, but rather of finding the right goods. When the right goods are offered at the right price, the buyers will be ready enough to come into the market. The consumer's money now flows into channels not directly connected with the turnover of merchandise. Life insurance and savings banks have been apparently the principal recipients. Little money has gone into investments, the small investor having been frightened away from this form of investing as the result of the so-called bucket shop war.

With money aplenty and goods galore, there should be little difficulty of bringing together buyer and seller. Never was there an "advertiser's" market like that of today. The public is ready to buy. To produce a regular flow of merchandise all that

is now needed is to tell the consumer about his opportunity. Unfortunately, there is evidence of a shrinkage, not of the advertising expenditure itself, but in the variety of offerings. This is very regrettable because advertising has never paid better than at this very time.

Now Is the Time to Advertise

The truth of this may easily be gleaned from the fact that all those industries, which have advertised consistently during the last summer, have done well. Witness the unprecedented sales of automobiles, the similarly large sales of toilet goods, and a few lesser examples. Right advertising at the present time will turn the buyer from watchful waiting to open purchasing. All that he wants in fact is a good and sensible occasion to spend money.

Labor Situation Normal

The labor situation remains normal with wages moving upon a fair level, leaving the wage earner a good surplus over his indispensable purchases. The small increase in food prices, especially in the large cities and industrial districts, can have little effect upon the domestic budget.

However, attention must be drawn again to the slowness of commercial collections. The fact that these complaints are more frequent in purely commercial transactions while practically absent between retailer and consumer permits the conclusion that this situation has much to do with conditions in the industry itself.

Curtailment of Overhead Essential

An explanation is probably to be found in the comparatively high overhead of industrial operation inherited from our after-war prosperity. Overhead during that period in the form of rent, high salaries, and similarly high personal expenditures had grown very rapidly and entirely out of proportion with the rest of the expenses. When the decline came, prices had to be lowered and profits reduced. We have still with us the results of this enforced reduction. But it was not quite as easy to reduce the overhead items including rent, transportation, sales expenses, and salaries.

These continue to exert their influence and they form a veritable giants' load on the shoulders of all industrial operation. While earnings were good, the load was not felt so heavily. It has certainly a decided effect upon the bank holdings of all commercial enterprises, and in turn, of course, upon commercial collections. The curtailment of overhead expenditures, therefore, must form an important part of the financial policy of every business. The money saved can best be used to increase bank holdings and to relieve current indebtedness.

*Paints for the Gas Works and Their Selection

The kinds of paint used and how to use them

J. Grieve

THERE are numerous kinds of paint manufactured for steel protection, but, broadly speaking, they can be classed under four heads:

First, where basic pigments or mixture of pigments, such as red lead, blue lead, white lead (carbonate of sulphate) and iron oxides or graphites, are compounded with an oil vehicle.

Second, paints where similar pigments are compounded with cooked varnish vehicles.

Third, asphaltum paints.

Fourth, tar paints.

The first two dry chiefly by oxidation of the vehicle, while asphaltum and tar paints dry by evaporation of a portion of the liquid.

Oil and Pigment Paints

Paints under the first heading, that is, oil and pigment paints, are dependent for their service value on the careful incorporation of the pigment and vehicle, the quality of the oil to give extended life to the paint and to its insolubility, the proportioning and fineness of the pigments used to give moisture, resistance, density and wearing value to the film.

The service value of such paints cannot be judged by the contents of the paint, but depends largely upon the process used to incorporate the ingredients and the physical result.

One disadvantage of such paints, however, for gas works use, is that an effective oil vehicle usually dries too slowly to suit general service maintenance in face of fumes, or in the case of a gasometer where submersion is necessary a few hours after the paint has been applied.

Where the oxidation action between the pigment and the oil results in quick drying the paint is not suitable for exposure, because the action cannot be stopped or uniformly controlled.

Red Lead-Linseed Oil Paint

A typical example of the oxidizing action between pigment and an oil vehicle is that of red lead and linseed oil. This action is valuable for priming coat work on steel, but as the pigment is not stable when

*Read at the Annual Convention of the Canadian Gas Association.

exposed to fumes, nor the oxidizing action uniform, the film generally loses its value or becomes too brittle for extended exposure to the atmosphere.

Cooked Oil Vehicles

When cooked oil varnishes are used in paints as under the second heading, the service value again depends on the physical condition of the combined pigment and vehicle, and on the quality of the varnish. Too short a varnish will cause checking or cracking of the film, and result in expensive scraping or unsightly scaling of the paint. The true value is only obtained when the quality of the varnish is such that when combined with proper proportions of pigment, the film wears away gradually to a surface that can be readily repainted without losing too much of its moisture or fume resisting quality. The best service paints for gas works protection are made by this method.

Asphaltum Paints

Asphaltum coatings require very careful selection because the name is used to cover a multitude of misnamed paints of most uncertain value. Asphaltum paints have the disadvantage that, once used, a change to any other color or form of coating entails excessive expense, because the asphaltum must be removed before an oil or varnish paint can be applied on the surface. The use of asphaltum, even at its low price per gallon, entails high cost per unit of area covered, due to the low covering capacity of asphaltum coatings.

Tar products are subject to all the criticisms of the asphaltum paints, not only because of their high maintenance cost, but also because of their tendency to "alligator" under exposure to the action of sun and frost.

Application of Paint

Considerations of the question of application of paint entail one proviso:

The question must be complete,—that is, the manufacturer of the paint if he is to answer intelligently must know the exposure to which the paint will be subjected, any possible restrictions relative to methods of application, and if possible the nature of the existing surface.

There is then only one answer—the paint to give best results should be applied in accordance with the instructions of the manufacturer and to form the film intended.

You may apply paint by brush or air process if it is suitable, but if a manufacturer calls for a spreading capacity of 750 square feet per imperial gallon, and you allow the paint to be applied with a covering capacity of only 400 square feet per gallon, you are not only wasting paint but the probability is you are courting trouble. The same is true if you over-extend a paint.

One thick coat is not equal in service value to two thin coats of similar thickness, because the nature of a paint film is such that unless the film is spread to the proper extent, unequal setting occurs and the result is a punky film.

I visited a large gas works in the States recently where they had trouble with paint peeling on a gasometer. I believe the trouble they had was due very largely to the oversight in not following the covering capacity for which the paint was designed.

Manufacturers of special protective coatings for special purposes advise the covering capacities of paints. These are arrived at after most careful practical tests and after years of experience on actual work. Covering capacities are issued as a guide to the purchaser to show to what extent the paint should be brushed out. When any work is undertaken, therefore, and a customer figures on a set area, he should check up when the work is started to see that he is obtaining the covering capacity stated. If he does not obtain this covering capacity he should notify the manufacturer at once before any large quantity of paint is used, because a departure from these covering capacities means that either the men are applying the coating wrong, or that he has a condition on the surface different from that for which the paint was recommended.

Fineness of Pigments

The finest mesh through which paint pigments are gauged is 350 meshes to the lineal inch. At this gauge of course a large proportion of fine particles of smaller sizes go through the meshes, but the 350 mesh is the limit of cross section of the largest particles.

A paint spreading to 800 square feet per imperial gallon is approximately 1/400 of an inch in thickness. You can see at a glance, therefore, that the large particles are slightly thicker than the film, and consequently that the densest film is one not extended over 800 square feet per gallon. If a paint is spread further than this it has not enough body to give service value.

You will come across paints for which covering capacities are claimed up to one thousand and twelve hundred square feet per imperial gallon. These claims are usually selling claims which do not work out in practice. In any case, in view of the thickness of the film, paints should never be spread to this extent if protection of steel is the object in mind.

If you want to build up on your structures a film such that in lean years where painting operations cannot be undertaken and you have a margin of safety to carry you over without damage to the film, the safe practice is to adopt a paint of known service value, co-operate with the manufacturer relative to the application of the paint and thus remove the expense and hazard of experiment.

As The Journal Views It

RESEARCH IN THE GAS INDUSTRY

Industrial progress, possessing the attributes of permanency and steady advancement towards the attainment of a well-defined goal or the perfection of a significant plan, depends on the preliminary establishment of fundamentals and basic principles. In every industry pioneer work to formulate primary laws and facts or to secure practical substantiation of these must be performed by those who are far-sighted enough and sufficiently altruistically inclined to spend time, energy and money in experimental undertakings and studies.

Such work is in the nature of pathfinding, making preparations for future development, laying the foundations on which an industrial structure of outstanding prominence and importance is later to be erected. The men and groups of men, who enter upon such projects, the adventurers and pioneers, who are willing to lend their energies in preparing the way, who are content to forego the fruits of the present for the rewards of the future that may be theirs, perform a function whose value and pertinence to any industrial enterprise none can gainsay.

The research worker lives in the present, takes his inspiration from the past and works for the future. He is not content with things as they are. He looks far ahead and sees, sometimes clearly and sometimes not, what will transpire in time to come. He is like the scout, spying out the land in advance of the industrial army which slowly but surely follows in his tracks, carefully considering each step before it is taken, overcoming the obstacles that tend to impede its progress.

The research experimenter and those groups who stand behind him, furnishing him with the sinews of war wherewith to finance his undertakings, are apt to fret and fume against slow response to their work and those whose task it is to follow after are likewise inclined to resent the changes and new ideas that are being forced upon them by the men who are working to prepare the way for the progress of the ship of industry.

But it is a fact that research work has not been given the proper consideration that it deserves and in this respect the gas industry is really no better or worse than any of the other industries of our country. It seems to be an inherent characteristic of the "worker in the future,' the men and enterprises who are ahead of their times, that they are not appreciated, at least not as much as they like to be or as the events in the future often show they should have been.

When we look back to the past and read of the work and efforts of this and that inventor, of this and that enterprising company of men, to carry to success some new development or novel plan, we are often surprised to note how much opposition was prevalent, how great the resistance was which had to be overcome before the goal was attained. This is perhaps natural, for there is considerable inertia in every human being and the inertia in an industrial unit which is fairly prosperous and which can see nothing to worry about in the future, may really be stupendous.

It is not calumnious to say that the gas industry has been slow to progress because the conditions in the industry were such as to render the gas companies insensible to the need of preparing for the future. The result has been,—but we are happy to say that this condition applies no longer in all its severity,—that the experimenters, the pioneers, the research workers, the commercial enterprises which undertook the work and were content to stand the incurred expense, were conspicuously without honor in their own land. They were not appreciated nor given the support that they were entitled to. They were left to carry on their work alone, perhaps not exactly sneered at or interfered with in any particular manner, but religiously disregarded, ignored. Their's was the folly! Their's was to suffer the results thereof!

All this is past. There is a different spirit prevalent in the gas industry. Today the value of research is recognized. There is no longer the isolation that existed in the past. The very ones who were ignored are now called upon for assistance. The gas industry has come out of its trance. The future now looks bright to every gas man. The sun of gas progress has crept up above the horizon. Industrial gas has made its entrance into the gas field, has come to stay and to develop until it attains full growth. Experimenters are numerous now. All fields in which heat is used are being considered and attacked as possible outlets for the use of gas and gas appliances. The industrial age of gas has come.

But the gas industry must not forget the few who say what is now evident to all. All honor is due to those who blazed the trail years ago, who

were gifted with a clear vision to see into the future, to foretell what was to happen in time to come, who were courageous enough to undertake work, which on its surface was without profit or value to the gas industry as a whole, but which afterwards proved to be the cornerstone of a new industrial structure. Nay, more than honor is due to them. They should be given just reward. They have a claim on the gas industry which should be fulfilled.

They must be encouraged not only by words of praise but in more substantial ways. For their work is not concluded by any means. The field has just been scratched. There are many problems to be solved, many difficulties to be overcome, many obstacles to be destroyed before the gas industry gains its goal. They must go on experimenting, preparing for the future; they must be in the van of progress, for without them there cannot be any advancement of the entire industry. Their work today may appear impractical, of no immediate consequence, but it will be eminently useful when the proper time comes. The advance guard, the scout, must be supported and supported practically and substantially. Otherwise, the main army cannot move forward. In the battle for the attainment of the ultimate goal,—gas the universal fuel of the future,—the research worker stands at the head of the industrial column and if he fails through lack of proper support, the battle cannot be won.

COAL CARBONIZATION

(Continued from Page 487)

troublesome products not caused labor costs to appear on the balance sheet, much less study along these lines would have ensued. One has only to stop to review the direction of the study given to stoppages from naphthalene and degraded tar to realize that much of this study could profitably have been put on the primary consideration of avoiding their formation.

In sketchily treating this angle of the physical aspects of coal carbonization, no attempt has been made to record any close measurements nor to balance the component parts with the original coal. Rather have we tried to put in some semblance of logical form certain laws, the understanding of which in their relationship to each other might be useful in determining how gas coal should be retorted to produce the most economical total of saleable constituents.

(Considerable of this paper has been omitted for want of space.)

REGISTERING CARBON DIOXIDE METERS

(Continued from Page 483)

is therefore directly connected with the rise and fall of the mercury level. When the bulb descends the mercury seal in the reversing arrangement is turned first in one direction and then in the other, and the connection 4 is connected at one time with the connection 31 and at the second time with the connection 29. In this manner the gas is automatically directed towards different parts of the apparatus, through which it must pass, so that the different steps in the analysis may be carried out.

Analytical Process

The analytical process takes place in the following manner:

Through the fall in the level of the mercury in the volume measuring device 11, the sample of gas that is going to be analyzed, is sucked in through the gas inlet. Through the lowering of the bulb in the reversing device described above, the mercury seal in that device is caused to flow in such a direction that the tube 4 makes connection with the tube 31. This corresponds to the diagrammatic position of the apparatus as indicated in figure 3. As long as the mercury level rises, the gas is forced out of the volume measuring device 11 through the tube 32, the mercury seal 48, the tube 23, the water collector 15, the tubes 4, 31 and 60 into the potash bulb 61. The gas, passing through the potash bath, loses its carbon dioxide, which is absorbed by the caustic potash. The residual gas escapes partly through the tubes 59 and 44 into the free air up to the moment that the connection between the tube 59 and the tube 44 is closed by the rising mercury.

At the same moment the mercury in the volume measuring apparatus rises in the narrow tube between the two enlargements 11 and 12 and with the pressure remaining constant an exact quantity of gas is taken for further analysis. All this takes place absolutely automatically.

Further Operation of the Apparatus

As the level of mercury rises still further, the rest of the gas is forced into the measuring bell, which is closed to the outside air by means of a liquid seal. This is usually glycerine. The measuring bell 57 is raised and turns the wheel 53, which engages with the wheel 52 by means of a catch during the last part of its motion. The pan, which draws a line on the curve sheet during the motion of the measuring bell, hangs from a chain which is connected to the wheel 52. The lower limit of this line corresponds to the percentage of carbon dioxide in the gas that is being analyzed.

On rising in the tube 24 the mercury finally rises above the level of the volume measuring device 11 and due to this condition completely forces out the volume of gas, that has been trapped, from the apparatus into the caustic potash container.

As the mercury falls a new sample of gas is sucked into the volume measuring device through the gas

inlet. The bulb of the reversing device falls, and its mercury seal is caused to flow in such a direction that the tube 4 is in connection with the tube 29. This condition of the apparatus is seen in figure 4 in dotted lines.

However, simultaneously therewith the space under the measuring bell is put in connection with the outside air through the fall of mercury in the tube 44. The mercury comes back to its original position. The Duplex Mono apparatus is then ready for the next step in the analysis. As soon as the mercury rises, the sample of gas that is sucked in is then analyzed in the following manner for its content of carbon dioxide and combustible gas.

Analysis of Combustible Contents

The gas is now forced by the rising mercury out of the volume measuring device through the tube 32, the mercury seal 48, the tubing 23, the water collector 15 as well as through the tube 4. But now its path is directed through the tube 3 and the tube 29 to the furnace 50 and then it passes through the quartz glass tube 51, filled with copper oxide and heated by means of the electric current. In this apparatus the combustible gases, present in the gas mixture, are burnt up to give carbon dioxide and water vapor. The gas then passes through the connection 60 into the caustic lye container 61, where the water vapor is precipitated and the carbon dioxide, both that portion which was present in the gas originally and the other portion which was evolved during the combustion of the gas in the electric furnace, are absorbed by the caustic potash solution. The reduction in the volume, that is, the difference in volume between the original gas and the residual gas at this point, is recorded by a moving pen on a curve sheet. This reduction in volume is manifesting in a certain movement of the measuring bell to which the recording pointer is fastened. The curve sheet then shows the content of carbon dioxide and combustible gas in the gaseous mixture. Inasmuch as the original carbon dioxide has been determined in the first analysis, a means is obtained of measuring the content of combustible gases in the mixture through a comparison of the two analyses.

The curve sheet is unwound from the roll 27 onto the drum 37 by means of a clock-work, located in the interior of the drum. It winds up automatically on the roll 30.

In order to carry out the analysis of the gaseous mixture with the greatest accuracy, the gas is measured in the volume measuring device and in the measuring bell under conditions of constant temperature and constant moisture content.

Temperature and Moisture Conditions

In order to maintain the temperature constant a cooling coil 57 is located around the liquid container (glycerine container) in which the measuring bell moves. Water is constantly forced through this coil. The gas in the measuring bell attains the temperature of the bell itself in this manner. Similarly the mercury in the flask 13 attains the temperature of the water and likewise the gas in the volume measuring device 11 through contact with the mercury assumes that temperature as well. The gas, which percolates through the lye in the container 61, becomes saturated with moisture and is measured in the measuring bell while in this condition. If a dry gas was measured in the volume measuring device 11 then, when it became saturated with moisture in the lye container its volume would be increased and inaccurate analytical results would be obtained. For this reason the gas must be saturated with moisture before it is first measured in the volume measuring device 11. For this reason as the gas is being sucked into the apparatus it passes through a water column about 15 millimeters high which rests on the mercury in the mercury seal of the volume measuring device 11.

EDUCATION OF PERSONNEL REPORT

(Continued from Page 485)

sible. Make the class work interesting. Clear and concise explanations of the class work as the employees are being taken through the plant or in the field is more effective than too much or too complicated class work and too little demonstration. We remember things we see better than things we hear or read about.

Under 3 (a-5) Value of House Organ

The house organ affords a splendid means of placing before our employees things they should know about their own company and about the industry at large. Many of the larger companies are publishing house organs, and while the degree of success is varied, undoubtedly a large percentage of employees receiving them are greatly benefited. In large companies it is much easier to succeed with such a publication because of the large number of employees to draw on for suggestions and interesting articles. In the smaller companies the whole secret of a snappy, interesting house organ lies in the right fellow having charge of it. This also applies to a considerable extent to the larger companies, as no matter what material may be furnished the editor of the paper, it has got to be put out in attractive form. We feel that unless you are able to put out a real live publication each month and keep it so, better let it alone.

Under 3 (a-6)Value of Books, Pamphlets and Posters

The value of distributing books and pamphlets as such is open to question, and it would seem better, if possible, that reprints be made as emanating from the company. If we maintain a library for the use of our employees, books and pamphlets pertaining to the gas industry should be accessible to every employee of the company. The best trade papers should be circulated among the employees, especially among the heads and sub-heads of departments.

Posters, as a general thing, fall very short of accomplishing what we anticipate. They are, as a rule, expensive and it is our belief that this money can be expended in other means of education to far better advantage. This does not apply to the National Safety Posters.

Under 3 (a-7) Value of Literature in Pay Envelopes

Literature in any form should be kept out of pay

envelopes. Other means should be used for placing educational matter in the hands of our employees.

Under 3 (a-8) Value of Suggestion Box

If enough interest can be aroused in it this is a very valuable means of ascertaining from our employees their views on a wide range of gas company activities. As a means of arousing interest, prizes could be given to employees making the most valuable suggestions. Companies who have tried the suggestion box have, as a rule, been well repaid for their efforts.

The task of educating the higher grade of employees is much more simple that the education of the rank and file. The education of this latter class should give us the greater concern, as they are the ones who come in daily contact with the class of customers who cause us the most trouble, through ignorance of the function of a public utility.

Under 3 (b-1 and 2)Education Without Company

This will only be touched upon briefly, as it seems that much more can be accomplished by education within the company. Employees who enter our employ should have received a sufficient amount of general education, before coming to us, to make it unnecessary for companies to arrange for such general education. Education without the company should be confined to special instruction which will better fit the employee to carry out company policies and practices. Generally speaking, education outside the company should be for specific purposes and should be given only to employees who are keen for it. It is a great mistake and a waste of money to compel employees to take prescribed courses in schools and universities. To those desiring to take advantage of the opportunities offered by such courses, the company should directly or indirectly see to it that the employees are reimbursed for their time and expense. Many of the companies offer to their employees such an opportunity and are meeting with varying success; some companies report marked interest in these courses by employees, while others frankly admit their disappointment with the results. It would seem as though a great deal which is included in the courses given in the schools and universities could be worked out and given by instructors in the company with much better results.

Education of Industrial Salesmen

There is, however, one branch of our activities where a thorough outside course should be by all means given. We refer to the education of the industrial salesmen. These men are thrown into daily contact with highly technical men in other lines of business and it is the utmost importance that such men should be trained to the minute. The possibilities offered gas companies in the industrial field have hardly been scratched, and with men fully competent to handle this branch of our business we have a bright future before us. We understand that the Massachusetts Institute of Technology has a complete course which fits men for just this kind of work, and it is probable that other similar institutions are as well equipped. We urge every company to seriously consider giving their industrial salesmen the best education obtainable. Money spent in this way will be repaid to us manifold in the future.

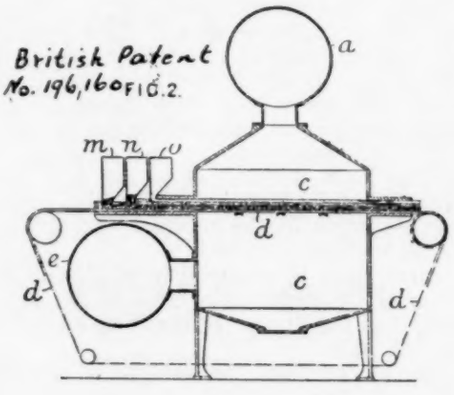
Conclusion

In conclusion we should impress upon our employees that a public utility is a collective effort of community usefulness; that every one of them is an important cog in the wheel and that it is their company. If they are familiar with every branch of the work, believe in their company, talk about it, and work faithfully for its success, then gradually our efforts will be rewarded not only by a more intelligent and efficient corps of employees but also by a better understanding of the gas industry by the public,—the real goal of all our educational work.

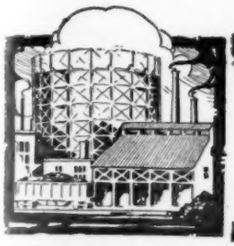
Respectfully submitted,

A. F. Short, Chairman; De Witt Clinton, J. R. Fenniman, A. M. Boyd, F. C. Hoffman, G. M. Hergesheimer, P. M. Scott, P. W. Herring, Joseph Lucena.

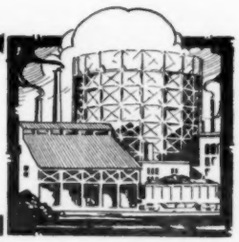
Filtering Device



An endless perforated or woven metallic belt, d, is caused to travel across the downward path of gas in the chamber, c. The hoppers, m, n, and o, deliver successive layers of refractory grit or other filtering material of increasing fineness upon the belt. After passing through the chamber, c, the filtering material is discharged from the belt, separated from the dust deposited upon it, re-graded, and returned to the hoppers. The belt may be replaced by a rotary disc, part of which projects across the chamber, c, and from another part of which the filtering material is removed by a scraper. This apparatus is patented in British Patent No. 196,160.



NEWS OF THE GAS INDUSTRY



New Publicity Association in New England

Within the very near future there will be a meeting of a new association of gas men called The Gas Board of Trade of New England. This association is being formed for the purpose of bettering the public relations of gas companies in New England.

Recently a Boston newspaper ran an article describing the completion of the new ten million cubic feet holder of the Boston Consolidated Gas Company. This article was headed "Gas Still in the Running." It can easily be conceived what an impression this caused the general public, thus insinuating that the gas industry is waning.

It is to counteract this tendency among newspaper writers and editors that the newly formed Gas Board of Trade proposes to do good work. The members also feel that great confusion is created in the public mind by the constant reference to gasolene as "gas." A recent reduction in the price of gasolene has caused some gas companies an unneeded amount of trouble explaining to ignorant people that the price of gas had not been reduced.

It is in the persuasion of newspaper writers and others to be specific in their use of terms and in educational work of this sort that the Gas Board of Trade of New England feel that they can do away with a great deal of misconception and ignorance regarding the gas industry on the part of the public.

Joseph F. Quinn Boosts Gas for Industrial Uses

When he was asked about the relative proportions of domestic and industrial use of gas, Joseph F. Quinn, of the Industrial Department of the Brooklyn Union Gas Co., Brooklyn, N. Y., replied that, while the domestic use is increasing in the number of installations, the industrial use is much greater in the cubic feet of gas consumed. Mr. Quinn is an engineer and is specializing in ferrous and non-ferrous metals and the heat treatment of steel. He spoke of special work being done in the welding of low-carbon steel with an oxy-gas flame instead of oxy-acetylene, and he also noted the development of the high-pressure unit system for industrial use, whereby gas is distributed at 10 pounds pressure or 70 times normal pressure and is used that way with no reduction, the gas passing over an orifice and draining air from the room.

To Install Larger Mains

Hempstead, N. Y.—Great improvement is to be made in the pressure and gas service in the village of Rockville Centre, according to an announcement made by a representative of the Nassau & Suffolk Lighting Company. The company is about to install an eight inch main through Burtis Avenue, south from DeMott avenue, which with the various tie-ins to be made, will affect all of Rockville Centre and give greatly improved pressure, it is promised. The work is to be done within thirty days, it was stated.

New Gas Plant Is Under Construction

Buffalo, N. Y.—On a 65-acre tract of land just beyond the city line the Iroquois Gas Corporation is building the first unit of a manufactured gas plant designed to meet the future needs of Buffalo. This unit will cost about $3,500,000. It will include one 5,000,000-foot holder, three water gas generators, a battery of twenty Woodall-Duckham vertical, continuous coal gas retorts, purifiers, boilers, compressor station, coke and coal handling equipment, coke bagging plant, office, shop and smaller buildings.

The work of laying the foundations for these structures is about 75 per cent completed, and the necessary railroad switches and sidings are nearing completion. This initial unit of the big plant will have a capacity of 13,500,000 cubic feet of manufactured gas per day. It is expected to be completed within two years, and work on additional units will then be begun. Ultimately there will be three holders in the Mineral Spring Road plant with a total storage capacity of 25,000,000 cubic feet, and the plant itself, when complete, will have a manufacturing capacity of 60,000,000 to 65,000,000 cubic feet of gas per day.

To Increase Manufacturing Capacity

The York (Pa.) Gas Company has had to give considerable study of late to the matter of its increasing output of gas. After having a careful survey made of the manufacturing facilities, it was found that the present apparatus was inadequate to handle the expected load. In order that there may be no interruptions to its service, it has, therefore, contracted with the U. G. I. Contracting Company of Philadelphia for the installation of one 9 ft. cone top carburetted water gas apparatus, which will embody all the latest developments for this size apparatus.

In addition to the water gas apparatus, a U. G. I. tar extractor will be installed.

This additional equipment will give the York Gas Company an increased manufacturing capacity in excess of 2,000,000 cu. ft. per day.

Announces Refund

Payment of the refund of ten cents per thousand feet of gas used by each consumer in Atlanta from January 1, 1922, to date, will begin on or about January 1, 1924, according to President Preston Arkwright, of the Georgia Railway and Power Company.

"The company," said Mr. Arkwright, in a recent interview, "is now going over its books checking up on the amount due each customer preparatory to observing the mandate of the Supreme Court.

"There are approximately 38,000 gas accounts on our books, which will necessitate the drawing of around 60,000 checks to cover the amount of the rebates, so you can see the bookkeeping on this job cannot be done in a minute.

"We will not be able to tell, until a complete check has been made of the accounts, just what this rebate will amount to, but it will probably come in the neighborhood of $200,000, more or less. That is, the refund will probably amount to something like $4 per customer.

"In the meantime, the new gas rate of $1.55 per thousand cubic feet, ordered by the court, will be put into effect immediately, and all October accounts will be figured at the new rate."

Big Gas Deal Is Approved

Newburyport, Mass.—It was officially announced that the stockholders of the Haverhill Gas Light Company have approved the purchase of the Amesbury and Salisbury Company at a cost of $109,500. The plant will be taken over pending approval by the State Board of Public Utilities.

Makes Needed Extensions

Beaumont, Tex.—Heating and lighting service will be furnished to the entire city when extensions of mains and improvements of the plant of the Southwestern Gas and Electric Company are completed, it was stated by T. M. Walker, general manager. Twelve months will be required to do the work, Mr. Walker added.

Installation of 14-inch mains from the plant to the intersection of Avenue A and Blanchette street has been completed and within a few days a force of men will be at work laying another 5,000 feet of the same size main from Blanchette and Avenue C to a connection with a 12-inch main at Avenue C and Cedar street, the two branches of which serve the west and north ends of the city, respectively.

Another crew of workmen is busy at this time laying a 4-inch service line in North between 7th and 8th streets to serve a number of new homes recently erected in that neighborhood.

Border Cities Get Gas Plant

Detroit, Mich.—Construction of a mammoth plant at the border by the Ontario Power Commission where gas and many by-products will be manufactured, was announced by Sir Adam Beck, chairman of the commission, who was in the border municipalities inspecting extensions to the municipal street railway.

The plant planned by the commission, Sir Adam explained, will lhave a capacity ten times greater than that being built at Ford, Ont., by the Ford Motor Company. The commission, he said, has received much valuable information from the Ford company.

"The manufacture of by-products would be a great boon to border residents. Coke could be sold, for instance, at cost to householders. This would effect a saving of perhaps $10 per ton in the cost of fuel, based on the present prices.

"Such a plant as the commission plans to build could be financed without the taxpayers contributing one cent."

Public Service Gets State Approval on Industrial Gas Rate

Evanston, Ill.—The Public Service Company of Northern Illinois has received the approval of the Illinois Commerce Commission, of its application for new and attractive gas rates in cities and towns immediately adjacent to Chicago where it is possible to accommodate them for both heating and industrial purposes.

Within the territory to be served, residents whose premises are adjacent to the company's heavy capacity gas mains may avail themselves of the new rate. Through the operation of this rate gas may be supplied for gas fired steam boilers, gas fired hot water boilers, or gas fired hot air furnaces, on terms heretofore practically impossible, but which now place the convenience within the reach of those who may desire it.

The new industrial rate which is likewise available to customers whose premises are adjacent to the company's mains, which carry regularly a sufficient supply of gas for such purposes, is designated to meet rapidly developing fuel conditions that recognize the economy of gas.

The industrial schedule, furthermore, carries a coal and oil clause permitting the gas rates to fluctuate automatically with the rise and fall of coal and oil prices.

Five Utilities Firms Study Rochester Gas Plant

Rochester, N. Y.—Representatives of five utilities companies have been in Rochester during the past week inspecting the operation and equipment of the Rochester Gas and Electric Corporation. Engineers from Boston, New York City, Montreal and San Francisco have visited here, indicating, according to Herman Russell, president of the lighting company, that the Rochester firm holds an important place among the country's producers of gas and electricity.

Methods of gas manufacture here have been an especial object of study on the part of the visitors. The bookkeeping and accountancy methods of the Rochester company also have been examined.

To Install Automatic Control

At various times the Public Service Gas Company has installed U. G. I. automatic controls in the various gas plants of its system, until it now has several automatic controls in regular operation.

The first of these controls was installed in the early part of 1920 and it has just placed its latest order with the U. G. I Contracting Company of Philadelphia for another Model "B" Automatic Control to be installed at the Market Street works, Newark, N. J.

James Stone Named Head of Spokane Gas Concern

Alliance, Ohio.—James L. Stone, vice-president and general manager of the Ohio Public Service Company in the Alliance district, has been promoted to a similar post with the Spokane Gas and Fuel Company of Spokane, Wash., according to a formal announcement.

Mr. Stone will assume his duties on the Pacific coast shortly. The new place represents a substantial promotion for the Alliance executive. The Spokane concern is one of the Doherty interests and is one of the most substantial firms of its kind in the Far West.

Mr. Stone joined the Doherty interests in Denver in 1905. Eight years later he joined the new business department of the Toledo branch. He was promoted to manager of the new business department at Mansfield in 1914 and went to Salina, Kan., as general manager in 1919. Two years later he was transferred to the Alliance concern, coming here as vice-president and general manager.

The retiring executive has been instrumental in bringing almost unlimited power resources to the Alliance area during his regime here.

Fast Progress on Gas Plant

Ashtabula, Ohio. — Ashtabula people will be able to procure an ample supply of artificial gas by January 1, 1924.

This is the latest prophecy of gas men interested in the project of bringing gas to Ashtabula from the plant of the Diamond Alkali Company of Fairport.

"The Fairport company's progress on the plant it is building is up to schedule," is the information given out. The schedule calls for the completion of the plant by the first of the year.

Work on the pipe line is not going as rapidly as was expected, but it will be ready for use before the producing plant can be completed. The reason for the lack of progress on the pipe line is the inability of the contractors to get enough men. At present the line is laid about seven miles from the city westward. The trench is dug a distance of nine miles.

New Commercial Agent for Vicksburg Company

Vicksburg, Miss.—The Vicksburg Gas Company, in line with policy and plans of that important public utility in other cities, is to have a commercial agent.

The new and important member of the local company is Robert C. Anderson, and he formerly occupied a similar position with the Greenville Gas Company.

Mr. Anderson stated that it would be his constant aim to improve the service in every way possible; to strive to build up good-will for the company and also increase their list of customers.

Mr. Anderson states that he will also make personal visits to the patrons of the company and will be pleased to receive suggestions from them as to developments which they consider will increase service and efficiency.

Gas Users Increasing

San Francisco, Cal.—A gain of 10,654 electric and gas consumers in the first nine months of the present year is indicated in the figures just issued from the office of H. M. Crawford, sales manager of the Pacific Gas and Electric Company. In order to take care of this increase the company has issued orders for reconstruction and additions to the present equipment amounting to $49,947.

Gas Co. Plans Approved

Salinas, Cal.—In a communication to the city council, James F. Pollard, vice-president and general manager of the Coast Valleys Gas and Electric Co., outlined plans for the laying of new water and gas mains during the year 1924. The plans conform to the council's 1924 street improvement campaign and the company will install new mains and service pipes at the same time the improvements are undertaken.

To Double Capacity

Ocala, Fla.—J. D. Wilkes, manager of the Ocala Gas Company, has announced the company will double its facilities and work on the extensions will begin immediately. The number of consumers has doubled since 1916, he says.

To Build Gas Plant

Hutchinson, Kan.—E. Zimmerli, of California, has placed a proposition before the city commissioners and the chamber of commerce of Pratt, to build and operate an artificial gas plant. Mr. Zimmerli would operate the plant personally and sell the gas for heating and lighting purposes. The proposition is taking form among the business men and may be a coming project for the city of Pratt.

Approves Value of Shares

New Bedford, Mass.—Department of Public Utilities approved the change in the par value of capital stock of New Bedford Gas & Edison Light Co., from $100 to $25 per share. Company has capital stock of $3,434,400, and steps will be taken at once by the management to issue new certificates in exchange for the present stock certificates outstanding. The change has already been authorized by the stockholders.

Improving Plant

Des Moines, Ia.—The installation of a new 100 horsepower boiler has been commenced at the gas plant of the Keokuk Electric Company. The cost of the work will be $8,000, according to Manager Walter H. Burke of the local company. The new boiler is part of the new equipment which was ordered in the summer after there was an installation of $22,000 worth of machinery in the gas plant, which made it strictly modern.

Bradentown Wants Gas

Bradentown, Fla. — Approximately four hundred and twenty-five persons have signed up pledging themselves to use gas for cooking and heating provided a gas plant is put in at Bradentown and rate is not in excess of $2 per thousand feet.

Financial Statement.

Boston, Mass.—The Massachusetts Gas Companies' subsidiaries report for August, made public last week, net available for common dividends $270,051, increase of $33,623, or 14.22 per cent, compared with corresponding month a year ago. Subsidiary gas companies, 1923, $37,612.74; commercial companies (not including Beacon Oil Company) $232,438.22, total $270,050.96; 1922, subsidiary gas companies $42,534.04, commercial companies (not including Beacon Oil Company) $193,893.97, total $236,428.01. The combined net earnings available for dividends on common stock of the subsidiary companies of Massachusetts Gas Companies for eight months ending August 31, 1923, compare as follows: 1923, subsidiary gas companies $1,089,834.77, commercial companies (not including Beacon Oil Company) $1,706,049.11, total $2,795,883.88; 1922, subsidiary gas companies $1,093,890.03, commercial companies (not including Beacon Oil Company) $754,258.97, total $1,848,149.00. The subsidiary gas companies' increase in output for August and eight months compares with increase for corresponding months last year as follows: August, 1923, 4.39; August, 1922, 3.96; eight months, 1923, 11.42; eight months, 1922, 3.48.

Growing Number of Gas Meters Reflect Popular Strides

Long Beach, Cal.—Ample evidence that Long Beach not only is maintaining its past record of tremendous population growth, but is striding ahead faster than ever before, is gleaned from the September report of Frank C. Bivens, Long Beach superintendent of the Southern Counties Gas Company.

Mr. Bivens' report shows that there were 3,490 more gas consumers in Long Beach on the first day of October than there were on the first day of January.

The report also shows that August and September are the banner months of the year, to date, in the number of gas connections gained. The August gain was 523 and the September gain 511.

Mr. Bivens pointed out that these figures represent the number of meters installed, minus the number removed, or, in other words, they represent net gains. He also said that they cover only the city of Long Beach, and not the entire Long Beach district, of which he is superintendent.

New Gas Holder Is Almost Complete

Salina, Kan.—The new $200,000 cubic foot gas holder of the Salina Light, Power and Gas Company is almost completed, it was stated at the office of the company. The new holder has a capacity of 125,000 cubic feet more than the old holder. New gas purifying devices will be installed to take the place of the old ones.

General Manager Harry Warner also stated that the old holder would be repaired after the new container goes into use.

Reduction in Rates

Jefferson City, Mo.—The Public Service Commission ordered the Springfield Gas and Electric Company to reduce its rates for gas service 15 cents a thousand cubic feet, beginning November 1, a saving of $19,200 a year to the consumers. The new schedule, $1.50 a thousand for the first 3,000 cubic feet a month, $1.40 for the next 5,000, $1.25 for the next 10,000, $1.15 for the next 15,000, $1.10 for all more than 33,000. A minimum charge of $1 per month is authorized.

The new order is based on a 7 per cent return on a valuation of $800,000, plus 2 per cent for depreciation.

Gas Company Extends Lines

Memphis, Tenn.—The Memphis Power Company is now laying 22,000 feet of new gas mains inside the city limits, according to Joe Brennan, superintendent of new construction work.

The new mains are being laid in sections of the city that do not now enjoy gas service. Brennan says this does not represent all the extension work that will be done this year, as new extensions are being ordered each week as rapidly as engineers can make the necessary surveys and the company can get in pipe.

Issues Additional Stock

Boston, Mass.—The Department of Public Utilities has approved the petition of the Dedham & Hyde Park Gas & Electric Company, authorizing the issue of 881 shares of additional $50 par capital stock to be offered at $55. Proceeds are to pay debts outstanding aggregating $47,500, and the remainder is to be used for additions to the plant.

Declares Dividend.

Providence, R. I.—Arthur F. Short, treasurer of the Providence Gas Company, has declared a dividend of $1 per share, payable October 1, to stockholders of record September 15.

Gas Company Exhibits

Gardner, Mass.—The Gardner Gas, Fuel & Light Company and the Gardner Electric Light Company had special booths at the annual style show and exhibit of the Gardner Chamber of Commerce last week.

Plant Under Construction

The first unit of a gas manufacturing plant that will eventually cover a sixty-five acre tract just outside the city limits of Buffalo is now under construction by the Iroquois Gas Corporation. The estimated cost of this unit is $3,500,000. This unit will include one 5,000,000 foot holder, three water gas generators, twenty coal gas retorts, coke bagging plant, offices, shop and accessory buildings. The railroad switches and siding are nearly completed. It is expected that the capacity per day of the first unit will be 13,500,000 cubic feet.

Million Cubic Foot Holder for Honolulu

The Cruse-Kemper Co., Ambler, Pa., has received an order for the erection at Honolulu, Hawaii, of a million cubic foot gas holder. The holder will require about 700 tons of coal, and is an indication of the prosperity of the gas industry on the island.

Navy Day

Today, October 27th, is designated as Navy Day. It is also the birthday of the late President Roosevelt. President Coolidge in a letter to Secretary of the Navy Denby has expressed a thought worthy of the consideration of everyone. The letter follows:

The White House,
Washington,
August 29, 1923.

My dear Mr. Secretary:

It has been pleasing to learn of the plans to continue this year the observance of October 27, the birthday of the late President Roosevelt, as Navy Day. The date is appropriate in view of the part President Roosevelt played in making our modern navy, of his historical writings dealing with it, and of the demonstrations which, as President, he gave regarding the effective utilization of naval power as a guarantee of peace.

Our country has undertaken, as its proper contribution to ameliorating the burdens of armament in the world, to place certain strict limits on our naval establishment. In view of these, which it need not be said will always be strictly observed, it becomes desirable that the highest efficiency, in men and material, be maintained. The navy is the first line of defense. Our national situation makes it peculiarly important to us, for we have never been committed to the policy of a large army, relying to a greater extent than less favored countries might, on the advantage of our location and our confidence in an adequate navy. The traditional devotion of the navy to the highest usefulness and efficiency makes it especially fitting that Navy Day be so observed as to show the country's appreciation of this splendid service.

Most sincerely yours,
CALVIN COOLIDGE.

Hon. Edwin Denby,
Secretary of the Navy.

Places Order for New Regulator

The Gas Machinery Company of Cleveland, Ohio, has received order to install one of its motor driven pressure regulators in the retort house of the gas company at LaSalle, Illinois.

The gas company is installing this regulator to be used in connection with its coal gas benches, as the regulator will maintain a practically constant pressure condition in the retorts, and thereby insure gas of nearly constant quality and maximum yield.

New Gas Plan

Youngstown, and all cities served by the East Ohio Gas Co., in this district, face a new gas problem, with the statement of Martin B. Daly, Cleveland, that the East Ohio is considering the mixing of artificial gas with its natural gas supply in order to meet the maximum demand throughout the year.

The East Ohio has already suggested the plan to the city council of Akron, which asked Daly to suggest a means of preventing the annual winter gas shortage which is epidemic throughout northern Ohio.

"Some time we will have to come to mixing gas," said Daly, "or use artificial gas entirely. As yet Akron is the only city where we have made definite proposals for mixing gas."

Daly would not say what the change would mean in gas rates.

Wm. B. Nichols Elected V. P. of Boston Consolidated

At a meeting of the board of directors of the Boston Consolidated Gas Company, held on September 27, Mr. William B. Nichols, president of the Citizens Gas Light Company, Quincy, Mass., was elected a vice-president of the Boston Consolidated Gas Company.

No other changes in the personnel of either company were made.

Troy Gas Co. Elects

Troy, N. Y.—The following were elected trustees of the Troy Gas Co. in an election by the stockholders held from 11 to 12 o'clock: James W. Fleming, Alba M. Ide, Edward Murphy, Thomas Vail, M. F. Sheary, Henry C. Shields, William Leland Thompson, James O'Neil, Frederick E. Draper, Jr., James H. Caldwell, Frank B. Twining, Hiram G. Hammett and Walter C. Coleman. These were inspectors of election: George A. Douglas, E. P. Birmingham and John F. Cahill.

Plan to Spend Big Sum to Improve Gas Service

Saratoga Springs, N. Y.—The Adirondack Power and Light Corporation commenced addition and improvements to its Saratoga Springs equipment which, according to information at the local office, will approximate $100,000 in cost. One of the principal additions will be the erection of a 500,000 cubic foot gas tank on its property on Excelsior avenue. Ground has been broken for the tank and its completion is planned within the next few months.

Other additions and improvements include new gas exhauster pumps with the installation of large gas pipes and overhauling of gas plant here. Several thousand feet of small mains in certain streets of the city will be replaced with pipes of larger capacity. The corporation is now completing the installation of a large gas main through Nelson avenue, from Lake to Union avenues.

The improvements, according to P. F. Roohan, resident manager, are made to meet the increasing domestic demands for gas for industrial and domestic use and to improve the gas system generally in Saratoga Springs. All work will be completed by June 1, 1924.

Experiments on Gas Drilling

Buffalo, N. Y.—The experiment of City Commissioner Perkins in municipal gas drilling and ownership for exclusively city institutions' use has been successful in that it has been found on blowing out the well on the grounds of the Buffalo City Hospital that there is a pressure of 775 pounds available. The well will not, however, be used again to supply the high pressure boilers, but will be used for cooking and incidental purposes in connection with the hospital. The opinion is advanced by some that another well on the grounds would provide sufficient gas for the high pressure boilers, giving the two wells alternate rest periods for the return of pressure.

Extending Mains

The East Ohio Gas Company, East Youngstown, Ohio, plans extensive extensions to gas mains throughout that city. Work will include laying new mains in some twenty streets.

To Improve Gas Sewer

Iron Mountain, Mich.—Although it is planned eventually to expand and rehabilitate the plant, officials of the Citizens Gas Company are now busy in an effort to better the service and furnish consumers with good gas.

The new manager of the company, W. F. Clausen, has had 26 years' experience in the gas business, coming here from Wisconsin. Since his arrival, he has been busy making a careful survey of the plant with the idea in mind of making such changes as are necessary to produce a steady flow of a good grade of gas.

Clausen believes, he declares, that the big thing necessary in operating a public utility is to give service and he is determined to do that here before all else. The reorganization of the company, following its purchase at a receiver's sale by E. J. Koppelkam of Milwaukee, has not yet been completed.

Plans for expansion are as yet very indefinite. It is estimated that to rebuild the plant to proper capacity and so that gas can be made as economically as possible will require at least $100,000. The company officials, therefore, intend to estimate very carefully the future growth of the city so that the plant can be built with this in mind. No extensions of the mains will be made this fall.

Files Petition to Dispose of Bonds

Mobile, Ala.—A petition was filed with the Alabama Public Service Commission by the Mobile Gas Company, seeking to issue and sell $953,000 worth of 7 per cent series "A" bonds, $725,000 worth to be issued at once and the remainder when the company's earnings, applicable to bond interest, amounts to one and one-half times the annual interest charges of the bonds issued and to be issued, according to information received. This bond issue is made necessary to retire $963,000 worth of bonds issued in 1910, and maturing January 1, 1924, it is stated. The company set forth in its petition that it is also desirous of paying off a mortgage on its office building of $20,500.

The bonds sought to be issued are secured under a mortgage to the Central Trust Company of Illinois, under date of December 1, 1921.

The petitoiner also sought permission to issue to the Metropolitan Gas and Electric Company $500,000 worth of its cumulative 8 per cent preferred stock, in part payment of a debt of $600,000 incurred through loans received, the $500,000 worth of stock representing one-half the total authorized amount of this 8 per cent cumulative preferred stock. The petition was set for hearing October 22.

How They Got There

Since publishing a photograph of the Rotarians dining on top of the Concord, N. H., gas holder a few weeks ago, several inquiries have been received as to how the guests reached the top. Mr. A. J. Smith, manager of the gas company, tells us in the letter herewith. Other companies might wish to try this method of entertaining.

"I take pleasure in answering your recent inquiry in regard to the dinner given the local Rotarians of Concord, on the top of our gas holder.

"I note that you ask particularly as to the method of getting our guests on top of the holder, and might answer that, like all Rotarians, they have nerve and a strong heart, and that Rotarians always do what they are asked to do, so that when they were told that the dinner was to be served on top of the gas holder, they simply walked up. The holder in question has a capacity of 500,000 cu. ft., and is about 120 feet high. The guests walked up the usual outside stairway provided on the gas holders, and got off onto the top of the holder at the top landing. Men were stationed at the various landings on the way up, to give encouragement and information to those who required it. By regulating the exhauster, which pumps gas into the holder, the crown was kept at all times on a level with the landing, and was so maintained during the entire meeting.

"The photograph, showing the members at dinner, was taken by one of the more courageous members, seated on the top girder of the holder."

New Catalogs

The Geo. D. Roper Corp., Rockford, Ill., have just issued Catalog H, covering their complete line of Roper ranges, hot plates, laundry stoves, toasters, room heaters, soldering furnaces, restaurant and hotel ranges, and the Roper automatic gas-fired steam boiler and pump.

The first page of the catalog stresses the point that every Roper gas range is inspected by a woman before it is certified by the Roper Quality Mark. A page is devoted to "The Story of Roper," which tells how Mr. Geo. D. Roper started the building of gas ranges over thirty-eight years ago. Following that is a page devoted to the Roper Institution and other chapters covering Roper policy, guarantee, facilities, together with a description of their plant. The remaining pages contain illustrations and descriptions, with specifications of the Roper products. A great deal of attention has been paid to the art work, which makes the appearance of the catalog unusually attractive. Toward the end of the booklet is shown reproductions of the Roper repair parts, and a complete diagram of the Roper range. Gas men will find a great deal of useful information in this catalog.

New Catalogs

The Magee Furnace Co., Boston, Mass., have just issued a report by Prof. Gordon B. Wilkes and others, applying to the insulation of gas ranges. Professor Wilkes and his associates made a number of tests covering speed in heating ovens, heat retention, elimination of odor when broiling, gas consumption, flue temperatures, etc. The results of these various tests are given in the report. There is also included in the booklet a menu covering one week, prepared by Ruth A. Chalmers, Assistant Housekeeping Editor, in charge of foods, Priscilla Proving Plant, Newton Centre, Mass. Attached to the report is an attractive booklet covering the line of Magee gas ranges.